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a cable pirate to steal. Mr. Brugliera contended that "there is little question that the most cost efficient way to accomplish access, control and security is the addressable set-top converter." The panel acknowledged, however, that black-market converter boxes have already begun to appear and represent the next challenge for the industry. Even the converter box technology, therefore, is not pirate-proof.

Mr. Brugliera also described a variety of products that cable hardware manufacturers have developed to satisfy specific



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into a specific technology. He pointed out that the technology available in today's remotes is very different than the technology used just a decade ago.

The A/B switch can be used to regain some of the features lost when a converter box is used. Mr. Brugliera explained that the A/B switch is an outlet on the back of the converter box which routes signals between the drop and either the converter box or the television set. It operates manually. If the converter box is switched off the signal goes directly to the television set. If the signal is unscrambled the consumer can use all the features of the television set. If the signal is scrambled, the converter box becomes necessary.

The VCR/converter interface creates several complexities:

- Unscrambled channels can be viewed and recorded simultaneously.
- Recording a scrambled channel limits viewing to that scrambled channel. An unscrambled channel can be viewed with the adding of a splitter, although Mr. Brugliera conceded that the typical consumer would require explicit instructions.
- Taping one scrambled channel while viewing a second scrambled channel requires two converter boxes.

Another example cited by Brugliera of the cable equipment manufacturing industry's response to consumer needs was its anticipation of the issue of programming VCRs with a cable converter. The "TAC-timer" is a Zenith remote control device

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with a built-in clock to automatically turn on the Zenith converter and change its tuning to capture the programs for recording. Although the TAC-timer was originally targeted for existing cable subscribers using Zenith addressable converters built before the rapid growth of VCRs, this feature is now built into most addressable converters.

Mr. Brugliera also discussed the Multiport technology. Multiport is a television set feature that consists of an add-on decoder used with specially designed TVs. The Multiport connector sits on the back of the television and functions like a converter box receiving and decoding designated scrambled channels. The Cable Products Division of Zenith has been working on a Multiport interface standard through the joint EIA/NCTA Committee, discussed below.

In looking towards the future, Mr. Brugliera visualizes similar efforts by industry to try to match rapidly advancing technologies with consumer needs. With television and cable equipment technology exhibiting quantum leaps in design, Mr. Brugliera said it has taken time -- and will continue to -- for both industries to keep pace with each other in responding to customer needs and offering new benefits.

Mr. Brugliera stated that while the introduction of the next five years of HDTV and digital signals will offer the opportunity to address some equipment problems, "old products stick around,"

"and with 20 million TVs sold annually and 170 million households - it is going to take a long time."

The panel addressed the possibility that interdiction technology would provide a means by which cable operators could set -- and change -- the mix of a subscriber's desired channels from the operator's headend without system-wide signal scrambling, thereby eliminating the need for a converter box and allowing consumers to make use of the advanced functions of their television sets. The concept involves a per-channel interfering signal sent remotely to a tap location (with an installed interdiction device) outside the subscriber's home. Addressable oscillators in the interdiction devices transmit the interfering signals to a single channel or groups of channels on the consumer's television.

In response to questions about the suitability of this technology for urban areas, the panel stated that interdiction was feasible but significantly more problematic for subscribers in large apartment buildings. Because each interdiction unit is sizable and requires its own power, locating enough appropriate and cost-effective space to introduce interdiction in an urban setting presents substantial difficulties.

Interdiction, however, is not a technology that deals effectively with theft of service because all signals are distributed to the tap in-the-clear, and all purchased signals are sent clear along the subscriber drops. The signals,

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therefore, could be easily intercepted at the tap location or from the subscriber drop line. There is no effective way, at this time, to detect these interceptions.

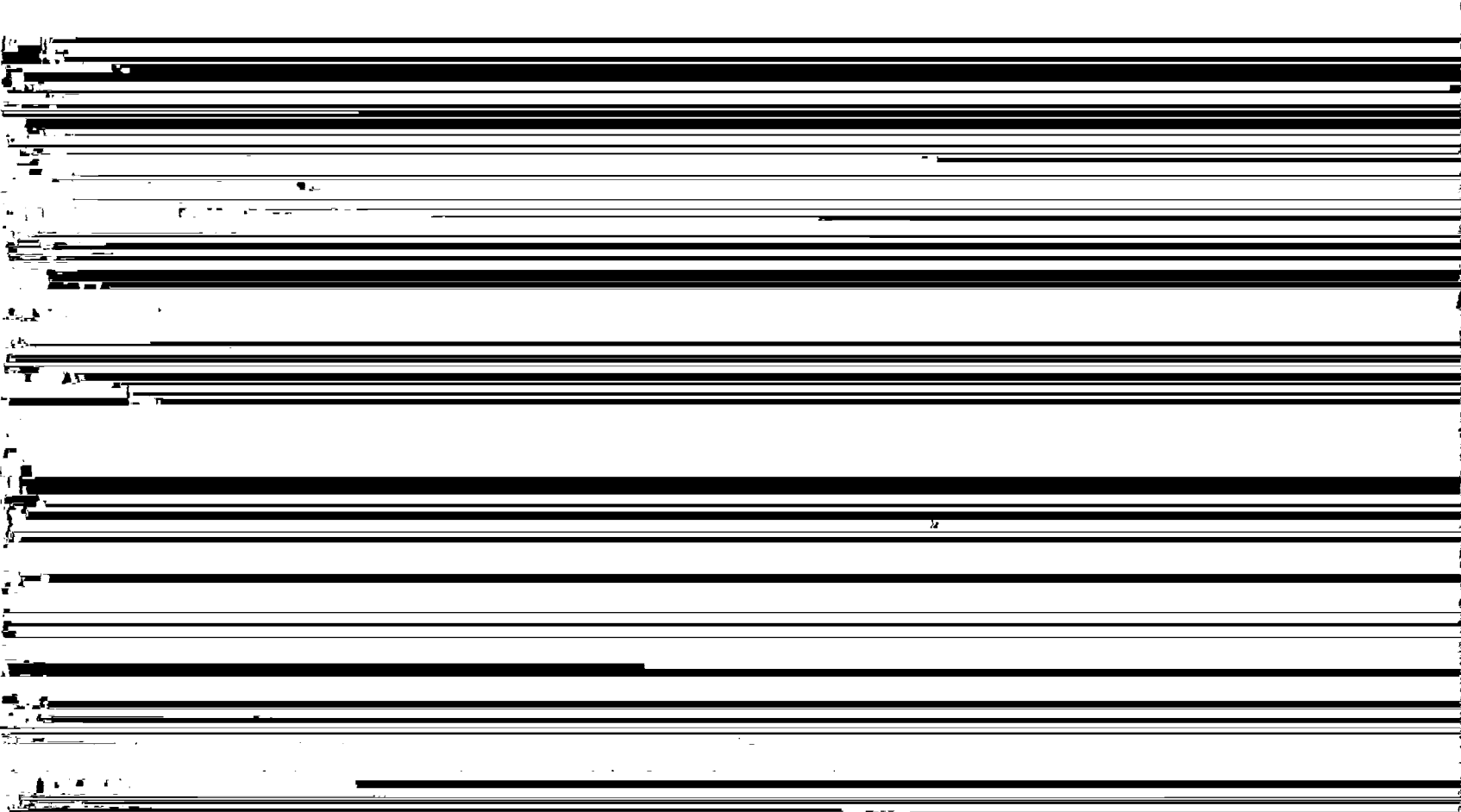
Additionally, interdiction does not currently provide for two-way addressability. An additional piece of equipment would have to be introduced in the home to order pay-per-view or home shopping directly, thereby defeating some of the benefits of interdiction. Mr. Moloney also observed that the cost/benefits analysis of interdiction would be affected by advancing technology. He pointed to the pending introduction of a one gigahertz system in Queens, which with present technology would make interdiction very costly.

Consumer Electronics Industry

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The organization sponsors forums for the development of industry standards and participates in the formation of public policy at all levels of government.

Since 1982, representatives from the EIA and the National Cable Television Association ("NCTA") have participated in a Joint Engineering Committee ("Joint Committee") to explore solutions to some of the subscriber interface issues described at the hearing. Mr. Poisson observed that the Joint Committee has been working on the increasing complexity of interconnection and interoperation between and among the various services and products. While the Joint Committee has made progress in certain areas, Mr. Poisson stated that additional support from the federal government for an inter-industry working group could help address equipment compatibility issues.



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services. One way this is done is by getting two way addressable converters into every home, even when a consumer believes he will never make use of this option. If the equipment is already in place, Mr. Poisson said, the cable industry counts on the impulse buy.

Mr. Mock also said that while technological features can be designed, the decision to implement a new feature is a marketing one. He pointed out that the Multiport technology seemed promising from a technical standpoint, but that cable operators had been reluctant to test the feature.

Mr. Poisson said that policy concerns between industries, is a decision for the Congress. He stressed, however, that new technologies that may now be unforeseeable will have a great effect on these issues. Mr. Mock said that the industry was too diverse for a single standard.

CONCLUSIONS AND RECOMMENDATIONS

The testimony tended to address two distinct topics: 1) problems associated with the introduction of converter box technology in Manhattan; and 2) long-term means of dealing with equipment compatibility among the cable and consumer electronics industries.

Converter Box Technology and Signal Scrambling

Based on the evidence presented at the hearing, the Department of Telecommunications and Energy finds that the use of converter boxes to descramble signals represents state-of-the-art

technology in the cable industry. It also represents an important and necessary measure to combat extensive theft of cable service in Manhattan. Other means of fighting theft, including the interdiction technology being tested in several locations around the country, do not yet compare with signal encoding and converter boxes. The Manhattan systems will, after full deployment, conform technologically to the delivery of cable service in the four other New York City boroughs.

The signal scrambling and converter box technology will protect law-abiding cable consumers from the financial and operational harm inflicted by cable pirates. More specifically, cable subscribers will not experience reception difficulties caused by thieves tapping into lines to appropriate unscrambled channels and will not subsidize the unlawful reception of cable service. Moreover, reducing theft of service will assure the level of revenue properly due New York City from cable television franchise fees.

Converter box technology also offers consumers the convenience of upgrading or downgrading their service options (such as HBO or Showtime) without having to wait for a technician to make a home visit. In addition, it will facilitate the ordering of pay-per-view programs for subscribers interested in that capability.

Notwithstanding these significant benefits, it is apparent that the introduction of signal scrambling and converter boxes causes certain adverse consequences for subscribers. For example, the converter box nullifies some features on advanced television receivers such as on-screen programming. To retain remote control capability, it requires the use of its own remote device that may not have the full range of options provided by the television set's remote; and the cable companies have imposed a two-dollar monthly charge for the remote control device for Basic Service customers. With respect to video-cassette recorders, subscribers will have to obtain an A/B switch to maintain existing ability to tape one program while watching another, and taping a scrambled channel while watching another scrambled channel will become impossible.

We find that the efforts of Manhattan Cable and Paragon to smooth the transition to the new configuration and to mitigate the adverse consequences for consumers have been inadequate. While several witnesses noted that Manhattan cable subscribers will simply be receiving the same system that subscribers in other boroughs have had for years, it is significant that Manhattan subscribers -- unlike those in other boroughs -- received cable service without converter boxes and scrambling for over a decade. While the system modification reflects state-of-the-art technology and carries the many benefits described above, the fact that many consumers may be experiencing what -- to them

-- is an unwanted and unnecessary change suggests that Manhattan Cable and Paragon should undertake measures to make that change as palatable as possible for consumers.

We believe that additional measures are particularly appropriate in that the cable operators, unlike subscribers, will experience only positive results from the converter boxes and signal scrambling. They will increase revenue by reducing theft, cut costs by decreasing home visits by technicians, and generate additional pay-per-view usage. The operators should be willing to share these benefits with their customers by taking steps to mitigate the adverse consequences that some subscribers will experience. We recommend the following specific measures:

- Establish a "Hot Line" number for subscribers with converter box or signal scrambling questions, staffed by specially trained personnel;

- Offer at least two home visits, free of charge, to teach subscribers how to operate the converter box with their television sets and VCRs;

- Advise major electronic retailers of compatibility problems and provide consumer friendly documentation containing appropriate warnings;

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-- Eliminate the two-dollar monthly charge for the remote control device, since it otherwise will require many subscribers to pay for a capability they previously enjoyed without charge; ***

-- Develop both written and video consumer guides specifically designed to address the equipment compatibility issues associated with the converter box; and

-- With respect to Paragon, have converter box installment personnel hand subscribers a notice which, in clear and bold writing, states that a twenty-five dollar deposit applies to the converter box.

At the Messinger hearings held in April, numerous Manhattan cable consumers voiced anger over the introduction of the converter box technology and signal scrambling. The Department of Telecommunications and Energy has received many phone calls and letters from consumers expressing similar sentiments. As the phase-in of converter boxes for the Manhattan systems continues, we anticipate that these concerns will mount. Accordingly, we strongly recommend that these steps be taken by Paragon and Manhattan Cable as soon as possible.

***/ Manhattan Cable and Paragon advised DTE on October 25, 1991 that they would be eliminating the Standard Service, two-dollar monthly charge for remote control devices as of December 1, 1991. Unfortunately, however, those companies are simultaneously increasing the Standard Service rate by the same two dollars per month. This transparent manipulation of rates was not what we had in mind in calling for the elimination of the remote control charge.

Long-Term Equipment Compatibility

It is evident that the cable and consumer electronics industries have attempted, to some degree, to coordinate developments in their respective technologies in order to promote compatibility. The Joint EIA/NCTA Committee has provided a vehicle for exchange of pertinent information and, in some cases, the establishment of industry standards.

The Joint Committee's efforts, however, have failed to prevent the simultaneous development of a confusing array of cable equipment and consumer electronics sporting a long list of options and features, with compatibility often incomprehensible for the typical consumer. Indeed, one witness noted that many

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no effort to help the participating industries to advise consumers of potential compatibility problems associated with certain equipment purchases.

Not all developmental issues can be solved by dialogue and cooperation. We believe, however, that more extensive participation by the federal government would encourage the cable and consumer electronics industries 1) to enhance their efforts to establish compatibility standards where possible, 2) to exchange pertinent information on research into new technologies, and 3) to assure that the public understands the ramifications of investing in various cable or television-related products. A heightened FCC focus on this area is particularly important with such developments as interdiction, High Definition Television, and interactive cable now on the horizon.

We recommend, therefore, that the Federal Communications Commission expand its efforts to promote inter-industry cooperation on the development of cable and consumer electronic equipment. It would seem that such an increased involvement could occur in association with the existing Joint Committee or through a newly-organized working group; the critical factor is federal monitoring and support for the appropriate setting of standards. Local governments should also be responsible for participating in this public/private initiative since they are generally the recipients of consumer complaints and inquiries

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regarding cable. The FCC letter submitted in connection with this hearing indicated an interest in pursuing an enhanced inter-

agency agreement and no recommendation based on the testimony

APPENDIX B



THE CITY OF NEW YORK
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY
75 Park Place, 6th Floor
New York, New York 10007

William F. Squadron
Commissioner

April 17, 1991

Telephone: (212) 788-6540
Facsimile: (212) 788-6551

Honorable Alfred Sikes
Chairman
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Dear Chairman Sikes:

As you know, cable television has been installed in over 55% of our nation's homes.

In many parts of the country, including New York City, cable television systems are being upgraded using addressable converter boxes. The boxes are state-of-the-art and are able to unscramble encoded signals to prevent theft and facilitate the provision of pay-per-view service.

Addressable technology, however, is not consumer-friendly. Consumers that have purchased "cable ready" televisions and video cassette recorders (VCR's) previously had the ability to record one program while watching another, use picture-within-a-picture technology, and enjoy the full functioning of their remote control devices. The cable television system's introduction of addressable converter technology has rendered "cable ready" equipment virtually meaningless and diminished the value of related equipment.

The responsibility for this adverse impact on consumers does not lie wholly with the cable television industry. Consumer electronics manufacturers have not worked with the cable industry to resolve these crucial interface issues. In fact, the problems are mounting every year because the consumer electronics industry adds and continues to promote new features which may be worthless on addressable cable television systems.

Honorable Alfred Sikes
April 17, 1991
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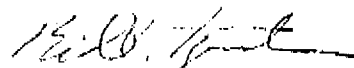
A major new technology, High Definition Television, in concert with the imminent transmission of digital cable television signals, may add to consumer dissatisfaction unless the federal government acts now to address the compatibility issue.

As the local government agency responsible for the largest cable market in the country, we ask that the Commission take action to compel the television, VCR, and cable industries to work together to assure that new technologies be developed in ways that will serve the public. We would be pleased to work with the Commission and industry representatives to foster a cooperative effort to establish standards that will lead to compatible equipment.

We hear regularly from cable television consumers and local and state legislators who claim, correctly, that they or their constituents are footing the bill for the failure of these industries to develop compatible technologies. Only the Commission can provide the national leadership necessary to avert the recurrence of this problem.

We look forward to assisting in such an initiative.

Sincerely,



William F. Squadron

cc: Commissioner Andrew Barrett
Commissioner Ervin Duggan
Commissioner Sherrie Marshall
Commissioner James Quello
Roy Stewart, Chief, Mass Media Bureau

WFS:rlc